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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09:874,073	06/04/2001	Emir Gurer	8003-391	6810

21971 7590 06/16/2003

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EXAMINER

KACKAR, RAM N

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 06/16/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/874,073

Applicant(s)

GURER ET AL.

Examiner

Ram N Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 09 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 45-47, 49-56 and 58-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 45-47, 49-56 and 58-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 1763

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 49 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The mechanical hardness of the coating in this instance is claimed to be less than the hardness of wafer. Since the apparatus is capable of processing wafers of many different materials and hardness, the hardness of the wafer would be indefinite. By comparison therefore, the claimed hardness of the coating layer will also be indefinite. Range of mechanical hardness given in standard units would overcome this rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 45-47, 50, 55-56 and 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al (US 6149727) in view of Chu et al (US 6120660).

Yoshioka et al disclose a process chamber comprising a media delivery member (Fig 1-9), a spin chuck (Fig 1-20), a vacuum line coupled to the spin chuck (Fig 1-2), the wafer support

Art Unit: 1763

surface area smaller than the wafer (Fig 1-20), plurality of point contact support structures (Fig 2 and Fig 3- 27) and a line contact vacuum ring (Fig 2-24).

Yoshioka et al do not disclose a coating layer of silicon oxide on the spin chuck including point contacts.

Chu et al disclose a susceptor coated by a silicon-bearing compound (Col 6 lines 48- 60) like silicon dioxide (Col 12 claim 5). The thickness of the coating is disclosed to be 0.5- 2.0 micron (Col 7 lines 18-19). Chu et al also teach that a silicon-bearing compound for protective layer is especially useful when a silicon substrate is used (Col 6 line 67).

Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to have a silicon based (silicon oxide) coating on the spin chuck including point contact structures to reduce micro-contamination, especially as silicon is generally the material of substrates for processing on the spin chuck and increase operating life of the chuck due to reduced abrasion.

Regarding claim 50, as the material of the coating is silicon oxide its hardness is generally less than the hardness of silicon. Moreover, as hardness of coating layer depends upon process conditions, it would be controllable within a range.

5. Claims 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al (US 6149727) in view of Chu et al (US 6120660) as applied to claim 45 and further in view of Lu et al (US 5904778).

Yoshioka et al do not disclose the thickness of the silicon-bearing layer.

Lu et al disclose a protective layer of silicon carbide less than 100 micron (Col 6 lines 21- 22) enough for protection. Too thick coatings could have a problem of peeling off.

Art Unit: 1763

Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to make sure the thickness of the protective coating is enough for protection as too thick layers may not be stable.

6. Claim 60-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al (US 6149727) in view of Chu et al (US 6120660) as applied to claim 45 and further in view of Chen et al (US 5904778).

Yoshioka et al do not disclose a skirt around the periphery of the wafer support surface.

Chen et al disclose a skirt for thermal shielding around the periphery of the wafer support surface (Fig 1-48), which does not support the substrate and is of a size that the total is greater than the size of substrate.

Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to have a skirt of thermal shield material so as to provide temperature uniformity on the substrate support surface.

7. Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al (US 6149727) in view of Chu et al (US 6120660) as applied to claim 45 and further in view of Takamori et al (US 6306455).

Yoshioka et al do not disclose a wafer transporter.

Takamori et al disclose a transport means for the spin chuck (Fig 7-22 and Col 3 lines 19-20).

Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to have transport means for higher throughput.

Art Unit: 1763

Response to Amendment

8. Applicant's arguments filed 6/9/2003 have been fully considered but they are not persuasive.

As explained earlier, applicant's argument regarding rejection under 35 USC 112 second paragraph has not been able to overcome the rejection of claim 49. However, as claim 50 compares the hardness of silicon dioxide layer with that of silicon of the wafer, the rejection under 35 USC 112 second paragraph has been removed.

Applicant's arguments regarding based on Table 1 are moot in view of Examiner not relying on this reference for rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 1763


however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK
June 12, 2003


SUPERVISOR
TECHNOLOGY CENTER